REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-19 are presently active in this case, Claims 4 and 9 having been amended by way of the present Amendment.

In the outstanding Official Action, the title was objected to as not being descriptive. The title has been changed to PROBING METHOD AND PROBING APPARATUS IN WHICH STEADY LOAD IS APPLIED TO MAIN CHUCK. Accordingly, the Applicants respectfully request the withdrawal of the objection to the title.

The abstract of the disclosure was objected to because of minor informalities. Accordingly, a substitute Abstract of the Disclosure has been added in place of the original abstract. The Applicants request the withdrawal of the objection to the abstract.

The disclosure was objected to for minor informalities. Accordingly, the specification has been amended to correct the misspelled words indicated in paragraph 3, on page 2 of the Official Action. The Applicants therefore request the withdrawal of the objection to the disclosure.

Claims 1-3, 5-8, and 15-18 were rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima et al. (U.S. Patent No. 5,642,056). For the reasons discussed below, the Applicants traverse the anticipatory rejection.

The Applicants submit that the Nakajima et al. reference does not disclose all of the limitations recited in independent Claims 1, 5, 15, and 16. For example, the Nakajima et al. reference does not disclose a probing method comprising the step of "overdriving the main chuck toward the probe card while measuring a load applied to the object of inspection by contact with the probes and controlling the movement of the main chuck in accordance with

the measured load," as recited in Claim 1 of the present application. Additionally, the Nakajima et al. reference does not disclose a probing method comprising the steps of "overdriving the main chuck toward the probe card while measuring a load applied to the object of inspection by contact with the probes by means of a sensor and controlling the movement of the main chuck in accordance with the measured load," as recited in Claim 5. The Nakajima et al. reference does not disclose a probing apparatus comprising "a pressure sensor adapted to measure a load applied to the object of inspection by the probes ...; and a controller for controlling the movement of the main chuck in accordance with ... the load measured by means of the pressure sensor," as recited in Claim 15. And the Nakajima et al. reference does not disclose a probing apparatus comprising "a pressure sensor adapted to measure a load applied to the object of inspection by the probes ...; and a controller for obtaining a distortion of the main chuck in accordance with ... the load measured by means of the pressure sensor," as recited in Claim 16.

The Official Action states that the Nakajima et al. reference describes "overdriving (70) the main chuck (15) toward the probe card (22) while measuring a load applied to the object of inspection (14) by contact with the probes (23) by means of a sensor (55) and controlling (70) the movement of the main chuck in accordance with the measured load...." However, the Applicants submit that the Nakajima et al. reference does not disclose measuring a load applied to the object. To be more specific, the Nakajima et al. reference describes the tip level of each probe is measured by a sensor (55)(see lines 12-14 of column 17), but the Nakajima et al. reference does not disclose that a load applied to the object through contact with the probes is measured. The Nakajima et al. reference utilizes tilt correction to adjust the card holder based upon probe tip levels at plural points, which is distinguishable from the present invention. The Nakajima et al. reference does not sense

pressure or measure load, and does not control movement of a main chuck based upon the sensed pressure or measured load. The Applicants therefore respectfully submit that the Nakajima et al. reference does not anticipate independent Claims 1, 5, 15, and 16 of the present application.

Claims 2-4, 6-8, 17, and 18 are considered allowable for the reasons advanced for Claims 1, 5, 15, and 16 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claims 1, 5, 15, and 16.

Claims 4, 9-14, and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. in view of Schwartz et al. (U.S. Patent No. 5,657,394). For the reasons discussed below, the Applicants traverse the obviousness rejection.

The Applicants submit that the Nakajima et al. reference and the Schwartz et al. reference, either taken singularly or in combination, do not disclose or suggest all of the limitations recited in independent Claims 9 and 19. For example, the cited references do not disclose or suggest a probing method comprising steps of locating a polishing mechanism right under the probes, where the polishing mechanism includes a polish plate to be used to polish the tip of the probes, measuring a load applied to the polish plate by the probes by means of a pressure sensor located under the polishing mechanism during the overdrive operation, and controlling the movement of the main chuck in accordance with the measured load, as recited in Claim 9 of the present application. The cited references do not disclose or suggest a probing apparatus comprising a polishing mechanism having a polish plate and attached to the main chuck, a pressure sensor adapted to measure a load applied to the polish plate of the polishing mechanism attached to the main chuck by the probes, and a controller

for controlling the drive mechanism including a mechanism for obtaining the spring constant of the probes in accordance with the load measured by means of the pressure sensor, obtaining the spring constant of the main chuck in accordance with the relation between the load and a distortion of the main chuck, and obtaining a load applied in the position where the probes touch the main chuck in accordance with the relation between the respective spring constants of the probes and the main chuck and an overdrive of the main chuck, as recited in Claim 19.

As discussed above, the Nakajima et al. reference does not sense pressure or measure load, and does not control movement of a main chuck based upon the sensed pressure or measured load. Additionally, the Nakajima et al. reference does not disclose or suggest a polishing plate to polish probe tips, as noted in the Official Action on page 6.

The Applicants further submit that the Schwartz et al. reference does not supplement the deficiencies in the teachings of the Nakajima et al. reference discussed above. The Official Action cites bus probe pin (130) for a teaching of a load measuring device. The Applicants note, however, that the bus probe pin (130) is described as determining contact resistances, but does not measure a load applied to the polish plate by the probes. (See column 14, lines 62-65.) Accordingly, the Schwartz et al. reference does not disclose or suggest measuring load applied to a polishing plate to polish probe tips as configured in Claims 9 and 19, and a controller as expressly recited in Claims 9 and 19.

The Applicants submits that a *prima facie* case of obviousness as defined in MPEP 2143 has not been established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the claim limitations expressly recited in Claims 9 and 19. The Applicants respectfully submit that the rejection is based on the improper application of hindsight considerations. Recognizing, after the fact, that a

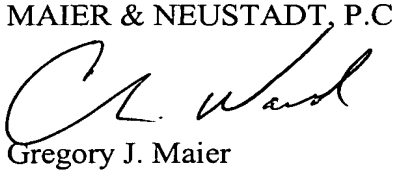
modification of the prior art would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. ***In re Warner***, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

Claims 10-14 are considered allowable for the reasons advanced for Claim 9 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claim 9.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Attorney of Record
Registration No. 25,599

Christopher D. Ward
Registration No. 41,367

22850
Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 10/00)

GJM/CDW/brf
I:\atty\cdw\197399US2\am1.wpd

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Serial No: 09/667,502
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IN THE TITLE

Please delete the title in its entirety and add the following new title:

--PROBING METHOD AND PROBING APPARATUS IN WHICH STEADY LOAD IS APPLIED TO MAIN CHUCK--.

IN THE SPECIFICATION

Page 2, please delete the paragraph beginning at line 4 and ending at line 15 and substitute therefor:

The loading chamber 11 is provided with a pair of tweezers 15 for use as a transportation mechanism for the wafers W. The tweezers 15 moves back and forth in the horizontal direction and rotates forward and reversely, thereby delivering the wafers W in the cassette C one after another and transporting them into the probing chamber 12. A sub-chuck 16 for pre-aligning each wafer W is provided near the tweezers 15. As the sub-chuck 16 receives each wafer W from the tweezers 15 and rotates [forward or reversely] in the forward direction and the reverse direction in a θ-direction, it pre-aligns the wafer W on the basis of its orientation flat.

Page 2, please delete the paragraph beginning at line 16 and ending at page 3, line 11 and substitute therefor:

The probing chamber 12 is provided with a main chuck 17 that carriers each wafer W thereon. The main chuck 17 is moved in X- and Y-directions by means of X- and Y-stages 18, 19, respectively, and moved in Z- and θ-directions by means of built-in drive mechanisms. Alignment means 20 is provided in the probing chamber 12. The alignment means 20 serves to align each wafer W with the probes. The alignment means 20 includes an alignment bridge 22 having first image-pickup means (e.g., CCD camera) 21 for imaging the wafer W, a pair of guide rails 23 for guiding the bridge 22 in reciprocation in the Y-direction, and second image-pickup means (e.g., CCD camera, not shown) attached to the main chuck 17. A probe card is provided on the top surface of the probing chamber 12. On the upper surface of the probe card, a test [hed] head is connected electrically to the card by means of a connecting ring. A test signal from a tester 34 (see FIG. 1) is transmitted to the probe card via the test [hed] head and the connecting ring, and further transmitted from the probe card to the wafer W. The object of inspection is checked for electrical properties in accordance with the test signal.

IN THE CLAIMS

4. (Once Amended) A probing method according to claim 1, wherein said measurement of the load applied to the object of inspection by contact with the probes includes steps of locating a polishing mechanism right under the probes, the polishing mechanism including a polish plate to be used to polish the tip of the probes; moving the located polishing mechanism toward the probe card, thereby bringing the polish plate into contact with the probes; overdriving the polishing mechanism toward the probe card; and

measuring a load applied to the polish plate by the probes by means of a pressure sensor [attached to] located under the polishing mechanism during the overdrive operation.

9. (Once Amended) A probing method in which a main chuck is moved in X-, Y-, and θ-directions to align an object of inspection on the main chuck with probes of a probe card located over the main chuck, the main chuck is moved in a Z-direction so that electrodes of the object of inspection are brought into contact with the probes, the main chuck is overdriven toward the probe card, and electrical properties of the object of inspection are inspected by means of the probes, the probing method comprising steps of:

locating a polishing mechanism right under the probes, the polishing mechanism including a polish plate to be used to polish the tip of the probes;

moving the located polishing mechanism toward the probe card, thereby bringing the polish plate into contact with the probes;

overdriving the polishing mechanism toward the probe card;

measuring a load applied to the polish plate by the probes by means of a pressure sensor located under the polishing mechanism during the overdrive operation; and

controlling the movement of the main chuck in accordance with the measured load.

IN THE ABSTRACT

Please delete the original Abstract in its entirety and insert the following substitute Abstract of the Disclosure:

--ABSTRACT OF THE DISCLOSURE

A probing method including the steps of moving a main chuck to align an object of inspection on the main chuck with probes of a probe card located over the main chuck. The method includes moving the main chuck toward the probe card, thereby bringing electrodes of the object of inspection into contact with the probes, and overdriving the main chuck toward the probe card while measuring a load applied to the object of inspection by contact with the probes and controlling the movement of the main chuck in accordance with the measured load. The method also includes inspecting the electrical properties of the object of inspection using the probes.--